Appl. No. 09/697,088
Amdt. sent October 14, 2005
Reply to Office Action of June 28, 2005

PATENT

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 - 17. (Canceled)

1   18.   (Currently amended): A method of sharing data in a computer system,

2   said computer system comprising a first computer, a second computer, and a storage system

3   comprising a disk control unit, a first disk unit, a second disk unit, and a third disk unit, the

4   method comprising:

5   forming a first duplex state between said first disk unit and said second disk unit,

6   wherein said disk control unit, in response to a write request from said first computer, stores

7   write data associated therewith to both said first disk unit and to said second disk unit, wherein

8   said disk control unit, in response to a write request from said second computer, stores write data

9   associated therewith to said third disk unit;

10   forming a simplex state and sending a first message from said first computer to

11   said second computer indicating forming of said simplex state, wherein said disk control unit, in

12   response to a write request from said first computer, stores write data associated therewith only

13   to said first disk unit, wherein said disk control unit, in response to a write request from said

14   second computer, stores write data associated therewith to said second disk unit; and

15   subsequent to receiving said first message performing at said second computer a

16   re-mapping operation between said second disk unit and said third disk unit; and

17   forming a second duplex state between said first disk unit and said third disk unit

18   and sending a second message from said second computer to said first computer indicating

19   forming of said duplex state, wherein said disk control unit, in response to a write request from

20   said first computer, stores write data associated therewith to both said first disk unit and to said

21   third disk unit, wherein said disk control unit, in response to a write request from said second

22   computer, stores write data associated therewith to said second disk unit.

1   19.   (Previously presented): A method of sharing data according to claim 18,

2   further comprising forming a simplex state subsequent to forming said second duplex state,

3   wherein said disk control unit, in response to a write request from said first computer, stores

4   write data associated therewith only to said first disk unit, wherein said disk control unit, in

5   response to a write request from said second computer, stores write data associated therewith to

6   said third disk unit..

1   20.   (Currently amended): A method of sharing data in a computer system,

2   said computer system comprising a first computer, a second computer, and a storage system

3   comprising a disk control unit, a first disk unit, a second disk unit, a third disk unit, and a fourth

4   disk unit, the method comprising:

5   forming a duplex state between said first disk unit and said second disk unit,

6   wherein said disk control unit, in response to a write request from said first computer, stores

7   write data associated therewith to both said first disk unit and to said second disk unit, wherein

8   said disk control unit, in response to a write request from said second computer, stores write data

9   associated therewith to said fourth disk unit;

10   forming a simplex state <u>and sending a message from said first computer to said</u>

11 <u>second computer indicating forming of said simplex state</u>, wherein said disk control unit, in

12   response to a write request from said first computer, stores write data associated therewith only

13   to said first disk unit; and

14   subsequent to <u>receiving said first message</u> ~~said step of forming a simplex state~~,

15   copying data stored in said second disk unit to said third disk unit<u>,</u> ~~and~~ <u>wherein</u> subsequent to

16   said copying ~~then~~ said disk control unit accesses said third disk unit in response to I/O requests

17   from said second computer.

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1   21.   (Previously presented): A method of sharing data according to claim 20,

2   wherein said step of copying data includes steps of:

3   converting a first data format of data stored in said second disk unit to a second

4   data format; and

5   storing said data according to said second data format to said fourth disk unit.

1   22.   (Previously presented): A method of sharing data according to claim 21,

2   wherein said first data format is a count key data format and said second data format is a fixed-

3   length block format.

1   23.   (Previously presented): A method of sharing data according to claim 20,

2   wherein said computer system further comprises a processor coupled to said storage system, and

3   said step of copying data is performed by said processor.

24-26. (Canceled)

1   27.   (Currently amended): A method of sharing data in a computer system,

2   said computer system comprising a first computer, a second computer, a first storage system

3   coupled to said first computer and comprising a first disk unit and a first disk control unit, and a

4   second storage system coupled to said second computer and comprising a second disk unit, a

5   third disk unit, a fourth disk unit, and a second disk controller unit, wherein said first disk control

6   unit and said second disk control unit are coupled via a network, the method comprising steps of:

7   ~~copying data stored in said first disk unit to said second disk unit via said~~

8   ~~network;~~

9   forming a duplex state between said first disk unit and said second disk unit,

10   wherein said first disk control unit, in response to a write request from said first computer, stores

11   write data associated therewith to both said first disk unit and to said second disk unit, wherein

12   said second disk control unit, in response to a write request from said second computer, stores

13   write data associated therewith to said fourth disk unit;

14   <u>terminating execution of applications in said first computer;</u>

15   subsequent to said terminating, forming a simplex state, wherein said first disk

16   control unit, in response to a write request from said first computer, stores write data associated

17   therewith only to said first disk unit; and

18   subsequent to said step of forming a simplex state, sending a message from said

19   first computer to said second computer indicating said simplex state, wherein said second

20   computer performs copying data stored in said second disk unit to said third disk unit and

21   subsequent to said copying, said second disk control unit accesses said third disk unit, in

22   response to I/O requests from said second computer.

1   28.   (Previously presented): A method of sharing data according to claim 27,

2   wherein said step of copying data includes steps of:

3   converting a data format of data stored in said second disk unit to another data

4   format; and

5   storing data according to said other data format to said third disk unit.

1   29.   (Currently amended): A storage system comprising:

2   a disk control unit; and

3   a plurality of disk units,

4   wherein said disk control unit is operable to form a duplex state between a first

5   disk unit and a second disk unit, wherein data associated with a write request from a first

6   computer is stored to both said first disk unit and to said second disk unit, wherein a third disk

7   unit is accessed to service an I/O request from a second computer,

8   wherein said disk control unit is further operable to form a simplex state between

9   said first disk unit and said second disk unit, wherein data associated with a write request from

10   said first computer is stored only to said first disk unit,

11   wherein during said simplex state, an application executing on said first computer

12   sends a message to said second computer indicating forming of said simplex state, wherein data

13   stored in said second disk unit is copied to a third disk unit and said second disk unit is accessed

14   to service an I/O request from said second computer,

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15   wherein in response to said message said second computer performs a re-mapping

16   of said second disk unit and said third disk unit.

1   30.   (Previously presented): The storage system of claim 29 wherein

2   subsequent to said step of re-mapping, forming a duplex state between said first disk unit and

3   said third disk unit.

1   31.   (Currently amended): A storage system comprising:

2   a disk control unit; and

3   a plurality of disk units,

4   wherein said disk control unit is operable to form a duplex state between a first

5   disk unit and a second disk unit, wherein data associated with a write request from a first

6   computer is stored to both said first disk unit and to said second disk unit, wherein data

7   associated with a write request from a second computer is stored to a fourth disk unit,

8   wherein said disk control unit is further operable to form a simplex state, wherein

9   an application executing on said first computer sends a message to said second computer

10   indicating forming of said simplex state, wherein data associated with a write request from

11   first computer is stored only to said first disk unit,

12   wherein during said simplex state, data stored in said second disk unit is copied to

13   said third disk unit and subsequent to said copying, data associated with a write request from said

14   second computer is stored to said third disk unit.

1   32.   (Previously presented): The storage system of claim 31, wherein data

2   stored on said second disk unit is of a first data format and data stored on said third disk unit is of

3   a second data format.

1   33.   (Previously presented): The storage system of claim 32, wherein said first

2   data format is a count key data format and said second data format is a fixed-length block format.

          34.   (Canceled)

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1   35.   (Currently amended): A storage system comprising:

2   a disk control unit;

3   a plurality of disk units; and

4   a network connecting at least some of said disk units,

5   said disk control unit being operable to copy data stored in a first disk unit to a

6 second disk unit via said network,

7   said disk control unit being operable to form a duplex state between said first disk

8 unit and said second disk unit, wherein data associated with a write request from a first computer

9 is stored to both said first disk unit and to said second disk unit, wherein data associated with a

10 write request from a second computer is stored to a third disk unit,

11   said disk control unit further being operable to form a simplex state, wherein an

12 application executing on said first computer sends a message to said second computer indicating

13 forming of said simplex state, wherein data associated with a write request from said first

14 computer is stored only to said first disk unit,

15   wherein during said simplex state, data stored in said second disk unit is copied to

16 a third disk unit and, subsequent to said copying, said second computer accesses said third disk

17 unit.

1   36.   (Previously presented): The storage system of claim 27, wherein data

2 stored on said second disk unit is of a first data format and data stored on said third disk unit is of

3 a second data format.

        37 and 38.   (Canceled)